

USSR

UDC: 621.396.69:621.314.2(088.8)

SHUL'ZHENKO, V. V., VANDYSHEV, M. S., GRISHIN, A. G.

"A High-Frequency Choke"

USSR Author's Certificate No 252429, filed 10 Apr 68, published 6 Feb 70  
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12V388 P)

Translation: A high-frequency choke is proposed which consists of several turns of coaxial cable on a toroidal ferrite core. To extend the band of the resonance curve for the choke, this core is made up of several ferrite rings which are in contact with each other and differ in frequency dependence of permeability.

1/1

SHUL'ZHENKO, Ye. B.

space  
physiology

SO: 3P85 55100

4 FEB 78

UDC 612.016.47:531.113+612.273.27-06:612.223.11

EFFECT OF AN ATMOSPHERE WITH A HIGH CARBON DIOXIDE CONTENT ON HUMAN TOLERANCE TO ACUTE HYPOXIA AND ACCELERATION

(CO<sub>2</sub>)  
Article by N. A. Agadzhanyan, Ye. B. Shul'zhenko, I. F. Vili-Vil'yans and A. V. Serdyukov, Moscow, Aviatsiya i Kosmonavtika, Meditsina, Russian, Vol 5, No 6, 1971, submitted for publication 24 August 1970, pp 53-60.

**Abstract:** Human tolerance to acute hypoxia and accelerations was studied following exposure to a hypercapnic atmosphere. The reserve time was determined at an altitude of 7,500 meters. Back-to-chest accelerations were imparted on a centrifuge with a large radius. The experimental results show that a many-day exposure to a hypercapnic atmosphere (with a CO<sub>2</sub> concentration over 30 mm Hg) decreased human tolerance to acute hypoxia and accelerations.

The literature contains information that the addition of carbon dioxide to a breathed gas mixture increases body tolerance to some extremal flight factors (I. R. Petrov, 1963; A. A. Sergeyev; V. A. Skrypin; Gauer and Luidema; Pierce and Lambertsen, and others).

The objective of our study was an investigation of human tolerance to acute hypoxia and transverse accelerations after man's prolonged exposure in an atmosphere with increased (up to 45 mm Hg) carbon dioxide.

#### Method

A GBK-63 pressure chamber, with a volume of 8 cubic meters, specially outfitted for man's prolonged presence, was used in conducting six 10-day experiments. One of these was a control with a normal gas composition, and in five a study was made of the body effect from an increased carbon dioxide content at a total chamber pressure of 760 mm Hg (PO<sub>2</sub> 22.6, 30.4, 38 and 45 mm Hg) and 405 mm Hg (PO<sub>2</sub> 38 mm Hg). The other microclimate parameters in the chamber varied in the range PO<sub>2</sub> 150-165 mm Hg, temperature 21.0-23.0, relative humidity 50-70 percent. Two subjects participated in each experiment.

Colien

USSR

UDC 612.17.014.21-06:612.766.2

KOPTEVA, L. A., BIRYUZOVA, V. I., and SHUL'ZHENKO, Ye. B., Institute of Normal and Pathological Physiology, Academy of Medical Sciences USSR, and Institute of Molecular Biology, Academy of Sciences USSR, Moscow

"Biochemical and Electron-Microscopic Characteristics of Dog Heart Mitochondria During Hypokinesia"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 70, No 8, Aug 70, pp 21-24

Abstract: After dogs had been kept in a state of hypokinesia for 15 days, their heart weight was reduced by 20-25% and the quantity of heart mitochondria decreased. The concentration of high-polymer RNA in the mitochondria decreased by 50.8% in the left ventricle and by 27.5% in the right ventricle. The capacity of mitochondrial proteins to incorporate  $C^{14}$ -labelled amino acids (proline, valine, arginine, serine, and threonine) decreased by a factor of 4.5 for the left ventricle and 2.5 for the right ventricle. An electron-microscopic study indicated that there was only slight deterioration of the structure of mitochondria of the ventricles. Mitochondria of the general type were mainly affected, and those of the muscle type were well preserved.

1/1

= 55 =

SHUL'ZHENKO Ye.B.

IPRS 57577  
15 Nov 72

- 80 -

Method

Thirty-nine experiments (30 rotations) were carried out using a centrifuge with a radius of 7.25 m with the participation of nine healthy males earlier subjected to centripetal accelerations.

The number of studies on body physiological reactions during sign-variable accelerations is limited. For the most part they pertain to experiments on animals (A. A. Kiselev; V. G. Petukhin) and man (A. M. Kurbanov, et al.), subjected to either single or multiple, but discontinuous exposures.

A combination of centripetal accelerations and additional rotation of the body about its longitudinal axis constitutes a complex mechanical factor whose physical essence involves appearance of a moment of constant displacement of the total acceleration vector.

Abstract: The cardiovascular effect of continuous accelerations of  $xy$  was studied on nine test subjects during 39 experimental runs. The accelerations resulted from a combined effect of centripetal accelerations of 3 to 7 g and additional rotation of the body about its longitudinal axis with an angular velocity of 15 and 60°/sec. Electrocardiographic, sphygmographic and photographic recordings were monitored. Disturbances of cardiac rhythms in the form of extrasystoles and sinus arrhythmia not related to respiration cycles, as well as periodic changes in the electrocardiographic parameters and peripheral pulse induced by changes in the direction of the acceleration vector were noted. Cardiovascular changes were found to be functional.

Article by Ye. B. Shul'zhenko and I. F. Vil'yanov, Moscow, Kosmicheskaya Biologiya i Meditsina, Vol. 6, No. 5, September-October 1972, pp 51-56, translated for publication 11 January 1973

HUMAN CARDIOVASCULAR SYSTEM REACTIONS TO SIGN-VARIABLE TRANSVERSE ACCELERATIONS

UDC 612.176.016.07:531.113

(12)

USSR

UDC: 681.3

SHUM, I. S. DIMITRIYEV, Yu. K., TOMILOV, Yu. F., POTAPOVA, Yu. N.

"A Linear Homogeneous Computer Control System"

V sb. Vychisl. sistemy (Computer Systems--collection of works), vyp. 39, Novosibirsk, 1970, pp 89-106 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V794)

Translation: The paper describes a linear homogeneous computer control system with partially variable structure developed and built at the Institute of Mathematics of the Siberian Department of the Academy of Sciences of the USSR. The system can operate in real-time and time-sharing modes. It can be used both for controlling scientific and technical experiments and processes in production, and for computations. V. Mikheyev.

1/1

- 41 -

USSR

UDC: 681.3

SHUM, L. S., POTAPOVA, Yu. N.

"An Interruption System for Controlling a Universal Computer System"

V sb. Vychisl. sistemy (Computer Systems--collection of works), vyp. 39, Novosibirsk, 1970, pp 119-127 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V791)

Translation: The authors consider the organization and operation of a hardware-software system of interruption for a homogeneous computer system and various schemes for isolating priority demands. Equipment and depth estimates are given for the isolation schemes. V. Mikheyev.

1/1

USSR

UDC: 661.3

DIMITRIYEV, Yu. K., SHUM, L. S., TOMILOV, Yu. F., POTAPOVA, Yu. N.

V sb. Vychisl. sistemy (Computer Systems--collection of works), Vyp. 39, Novosibirsk, 1970, pp 107-118 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V793)

Translation: The paper describes the structure of the commutation block and the principles of interaction of the elementary machines in a linear homogeneous computer control system. V. Mikheyev.

1/1

USSR

UDC: 681.3

SHUM, I. S.

"On the Functional Organization of Homogeneous Computer Systems"

V sb. Vychisl. sistemy (Computer Systems--collection of works), vyp. 39, Novosibirsk, 1970, pp 81-88 (from RZh-Kibernetika, No 11, Nov 71, Abstract No 11V795)

Translation: The author discusses relative addressing of the elementary machines in a homogeneous computer system, subsystem operation in carrying out a program with complex cycles without program changes (synchronous program operation). Relative addressing makes it possible to use unmodified parallel programs in subsystems with different geometric configurations and different arrangements of the subsystems relative to the physical structure of the homogeneous computer system. V. Mikheyev.

1/1



USSR

UDC: 681.3

SHUM, I. S., DIMITRIYEV, Yu. K., TOMILOV, Yu. F., POTAPOVA,  
Yu. N.

"A Homogeneous Linear Control Computer System"

V sb. Vychisl. sistemy (Computer Systems--collection of works),  
vyp. 39, Novosibirsk, 1970, pp 89-108 (from RZh-Matematika,  
No 11, Nov 71, Abstract No 11V794)

Translation: The paper describes a linear homogeneous control  
computer system with partially variable structure developed  
and constructed at the Institute of Mathematics of the Si-  
berian Department of the Academy of Sciences of the USSR. The  
computer system can operate in real time and in the time  
sharing mode. It can be used both for controlling scientific  
and technical experiments and production processes and for  
computations. V. Mikheyev.

1/1

USSR

UDC: 681.3

DIMITRIYEV, Yu. K., SHUM, L. S., TOMILOV, Yu. F., POTAPOVA, Yu. N.

"Commutation Block and Interaction of Elementary Computers  
in a Homogeneous Control Computer System"

V sb. Vychisl. sistemy (Computer Systems--collection of works),  
vyp. 39, Novosibirsk, 1970, pp 107-118 (from RZh-Matematika,  
No 11, Nov 71, Abstract No 11V793)

Translation: The paper describes the structure of a commu-  
tation block and the principles of interaction between ele-  
mentary computers in a linear homogeneous control computer  
system. V. Mikheyev.

1/1

USSR

UDC: 681.3

SHUM, L. S.

"On the Functional Organization of Homogeneous Computer Systems"

V sb. Vychisl. sistemy (Computer Systems--collection of works), vyp. 39, Novosibirsk, 1970, 81-88 (from RZh-Matematika, No 11, Nov 71, Abstract No 11V795)

Translation: The author considers relative addressing of elementary computers in a homogeneous computer system and functioning of a subsystem during execution of a program with complex cycles without programmed changes (the synchronon-program mode). Relative addressing permits the use of unaltered parallel programs of problems in subsystems with various configurations and various arrangements relative to the physical structure of the homogeneous computer system. V. Mikheyev.

1/1

- 14 -

USSR

UDC 681.3

SHUM, L. S.

"Economy of Homogeneous Computer Systems and Computers"

Vychisl. Sistemy [Computer Systems -- Collection of Works], No 39, Novosibirsk, 1970, pp 61-66, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V744, unsigned).

Translation: The economy of homogeneous computer systems and computers is compared for various ranges of productivity and conditions.

1/1

Organ and Tissue Transplantation

USSR

SHUMAKOV, V., Professor, and SHCHEGLOV, Yu., and BOGORAD, I., Reporters

"It Will Be a Perfect Automatic Device"

Moscow, Literaturnaya Gazeta, 26 Jan 72, p 12

Translation: Four years ago, Christian Barnard made the first heart transplant. Literaturnaya Gazeta has written articles about this kind of operation. In letters to the editor, readers ask us to tell whether this operation has entered clinical practice, which surgeon has made the largest number of transplants, with what results, and is there a search underway for other ways to save people suffering from serious heart illnesses.

Today we tell about research to create an artificial heart. This work is being done at the Scientific Research Institute of Clinical and Experimental Surgery of the Ministry of Health USSR

Literaturnaya Gazeta reporters Yu. Shcheglov and I Bogorad asked Professor V Shumakov, head of the division of transplantation and artificial organs of the Scientific Research Institute of Clinical and Experimental Surgery, to tell about the prospects of creating an artificial heart.

Question: In what stage is work on the artificial heart at the present time?

1/6

USSR

SHUMAKOV, V., et al., Literaturnaya Gazeta, 26 Jan 72, p 12

Answer: In a few years, we have created a large number of different types of experimental models of the heart. We have been helped by a number of industrial enterprises and scientific research institutions. I am not afraid to say that some of these models meet fairly high requirements. But all the same we are still at the very beginning of our path. In our country and abroad, those who are creating the artificial heart run into a large number of difficulties. For example, we still do not have material which meets all necessary conditions. The heart makes 40 million cycles a year. What kind of material should be selected to endure such a load for several years!

There are also other difficulties. For example the development of thrombosis. When blood comes into contact with various "nonliving" materials--plastics or metals -- it coagulates and thrombi are formed. Even the non-specialist understands the consequences of this. Several types of surfacing have now been developed which reduce the likelihood of thrombosis, but we are still not fully satisfied.

Finally, we face problems related to the source of power. The size of the artificial heart now corresponds to the heart of an experimental animal and is placed in its heart pocket. However the current source is outside.

2/6

- 40 -

USSR

SHUMAKOV, V., et al., Literaturnaya Gazeta, 26 Jan 72, p 12

Its size does not concern us. But when the subject of creating a long-term instrument comes up, miniature power sources are needed and they must be placed in the person's body itself. We are constantly carrying on appropriate research. From this point of view, isotopes are very interesting, particularly plutonium-238.

It sounds almost fantastic to use the power given off by the human organism during metabolism. But in general this is completely realistic.

Question: How do things stand with development of automatic control over the artificial heart?

Answer: Without solving this exceptionally important problem, it is impossible to even think of creating a sufficiently perfect artificial heart. After all, the heart responds very intricately to the organism's needs. For example, when you run the heart beats fast, but when you sleep the frequency of contractions decreases. This happens without our intervention, automatically. The artificial heart should work in the same way.

Together with the Institute of Engineering Cybernetics, our institute is deeply engaged in this problem. It is true that some scientists consider it too early to be thinking about this, they say it is for tomorrow. However, we hold a different point of view.

3/6

USSR

SHUMAKOV, V., et al., Literaturnaya Gazeta, 26 Jan 72, p 12

Question: Can we expect that artificial heart models created by you will be introduced into practice in the near future?

Answer: I think that it is possible to answer that question affirmatively.

Question: In your opinion, what new areas of interest in addition to creating an artificial heart are now exciting scientists?

Answer: I am particularly interested in the problem of creating an artificial liver. The liver is an extremely complex organ, an enormous chemical laboratory whose activity has not been completely studied yet. That is why it is not realistic today to make an artificial liver which could precisely copy the human one. If we were able to propose a model which performed even part of the functions of the actual liver, we would consider this an exceptional success.

Question: The possibility of preserving organs is now being intensively studied. What methods of preservation are, in your opinion, most promising?

Answer: We are working on preservation of the kidney and other organs, in particular the heart. Short-term preservation is now done through extreme temperatures. But this permits us to maintain an organ's vitality for just a short period. We have created an original, small-size apparatus in which it

4/6



USSR

SHUMAKOV, V., et al., Literaturnaya Gazeta, 26 Jan 72, p 12

is possible to deliver an organ that has been removed to any point in the country. There the kidney is perfused with special solutions at low temperature. We have raised the "life span" of the removed kidney to 24 hours.

Question: Who helps you design artificial organs and preservation equipment?

Answer: Engineers and mathematicians who are attracted by medicine. For example, they found an algorithm which makes it possible to recognize the degree of vitality of a transplant, and they wired it up on a special computer. Several times we have refused to perform kidney transplants because, using this computer, we determined that irreversible changes have taken place in it and the operation would be doomed to failure.

Question: What ways are there today to solve the problem of the heart transplant?

Answer: Our task is not to perform transplants for their own sake or to demonstrate a virtuoso's technique. Judge for yourself. In Canada, I believe, they calculated the average longevity of patients on whom heart transplants had been performed and patients on whom, for some reason, transplants had not been performed although they came to the clinic for that purpose. It turned out that the first group did not live nearly as long after the operation as

5/6

USSR

SHUMAKOV, V., et al., Literaturnaya Gazeta, 26 Jan 72, p 12

the second. That is something for doctors to think about.

With the contemporary state of medicine, are we surgeons able to guarantee longer life or not? In my opinion, this is a very serious problem.

There is a second and equally important side to the matter. Until now the donors have been people for whom specialists had given a diagnosis of so-called cerebral death. In a majority of cases, these patients actually did die. However, in practice, although very rarely, improbable cases still do occur where people with extremely serious injuries who are in a hopeless state recover. Well then, who will guarantee that one of the people from whom it is possible to take a living, beating heart would not have recovered? At the present time, no specialists are, in my opinion, able to do this.

All this naturally leads to a different attitude toward the heart transplant. We will begin to make this kind of operation only when we have appropriate guarantees.

6/6

USSR

UDC 615.477.24:616.12-089.28

SHUMAKOV, V. I., MOGILEVSKIY, E. B., KROL, A. D., ZUBAREV, V. A., SHIRKINA, T. V.,  
and YUGIN, A. A., Scientific Research Institute of Clinical and Experimental  
Surgery, Moscow

"Model of an Artificial Heart for Intrapericardial Implantation"

Moscow, Meditsinskaya Tekhnika, No 5, Sep/Oct 70, pp 5-10

Abstract: A model is presented of an implantable artificial heart which consists of two mirror halves (right and left), each containing an artificial auricle and an artificial ventricle. The median surfaces of the ventricles are flat so that they may be easily connected after implantation. The overall dimensions of the unit and the volume of its cavities depend upon the heart dimensions of the animal for which the artificial heart is intended. Information is provided concerning the design, development, and testing of the artificial heart unit. Stand tests of implantable models developed by the authors and of control systems for them have made it possible to determine their functional parameters and to select the optimal operating conditions. It has been determined that the models can be used for experiments with total substitution of the pump function of the natural heart. Experiments on calves and dogs have been already initiated.

1/1

USSR

SHUMAKOV, V. I., Professor

"Progress in Organ Transplants and Artificial Organs"

Moscow, Zdorov'ye, No 9, 1971, pp 2-3

Abstract: Progress in transplantation of donor organs has been decelerated by the scarcity of these organs, rejection reactions in the donor's body, and various ethical problems involved. While 101 heart transplants were performed in 1968, only 47 such operations were done in 1969 and 17 in 1970. However, by January 1971, there were 10 individuals who had been living with someone else's heart for 2 years. Artificial organs, though advocated by many, have the disadvantage of deteriorating after relatively brief periods. While research is being done to develop more durable materials and functional mechanisms for artificial organs, increasingly more attention is focused on a combined use of donor and artificial organs. The artificial kidney, for example, is an indispensable aid prior to donor kidney transplants and during relapses. This hemodialysis apparatus is now being improved to replace not only the filtering but also the reabsorbing functions of the kidneys. Similarly, a heart-lung machine that does not damage blood cells is urgently needed.

1/2

USSR

SHUMAKOV, V. I., Zdorov'ye, No 9, 1971, pp 2-3

Because of its complexity, the liver will not be replaced by a man-built apparatus in the foreseeable future. However, attempts are being made to design instruments duplicating some of the liver's functions. The currently available huge gas-exchange machines are being miniaturized with the ultimate objective of placement in the human thorax.

2/2

1/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--APPLICATION OF ELECTRIC SOUPLED STIMULATION TO IMPROVE THE EFFICACY  
OF CERTAIN METHODS OF SYNCHRONOUS AUXILIARY CIRCULATION -U-  
AUTHOR-(04)-SHUMAKOV, V.I., KUVAYEV, A.YE., TOLPEKIN, V.YE., SVETLOV, V.P.

COUNTRY OF INFO--USSR

SOURCE--PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTAL'NAYA TERAPIYA, 1970,  
VOL 14, NR 2, PP 83-88  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--HEART RATE, BLOOD CIRCULATION, HEART STIMULATOR,  
ELECTROPHYSIOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0033

STEP NO--UR/0396/70/014/002/0083/0088

CIRC ACCESSION NO--AP0105132

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105132

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT WAS SHOWN IN EXPERIMENTS ON 40 DOGS THAT APPLICATION OF COUPLED STIMULATION IN USING OF SOME METHODS OF AUXILIARY CIRCULATION (BY PASS SHUNTING OF THE LEFT CARDIAC VENTRICLE AND COUNTERPULSATION) IN CASES OF MARKED TACHYCARDIA AND SOME TYPES OF ARRHYTHMIA, CONSIDERABLY INCREASED THE EFFICACY OF THESE METHODS.

FACILITY: LABORATORIYA ISKUSSTVENNOYE SERDTSE I KLAPANNYYE PROTEZY NAUCHNO ISSLEDOVATEL'SKOGO INSTITUTA KLINICHESKOY I ESKPERIMENTAL'NOY KHIRURGII MINISTERSTVA ZDRAVO OKHRANENIYA SSSR, MOSCOW.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--17JUL70

TITLE--A NEW TECHNIQUE OF FORMING AN AUTOBIOLOGICAL LINING FOR THE  
PREVENTION OF THROMBOGENESIS ON PROSTHESES OF THE CARDIOVASCULAR SYSTEM  
AUTHOR--PETROVSKIY, B.V., SHUMAKOV, V.I., STEPANOV, G.A., PLOTKIN, L.L.

COUNTRY OF INFO--USSR

SOURCE--KHIRURGIYA, 1970, NR 1, PP 69-74

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CARDIOVASCULAR SYSTEM, PROSTHESIS, THROMBOSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1977/1711

STEP AC--UR/0531/70/000/001/0069/0074

CIRC ACCESSION AC--APCC44856

UNCLASSIFIED

33  
5  
38



Acc. Nr: **AP0044856**

Ref. Code: **UR0531**

PRIMARY SOURCE: *Khirurgiya*, 1970, Nr 1, pp 69-74

**A NEW TECHNIQUE OF FORMING AN AUTOBIOLOGICAL  
LINING FOR THE PREVENTION OF THROMBOGENESIS  
ON PROSTHESES OF THE CARDIOVASCULAR SYSTEM**

**B. V. Petrovskiy, V. I. Shumakov, G. A. Stepanov, L. L. Plotkin**

The authors propose a new technique of forming an autobiological lining on prostheses of the cardiovascular system, which consists in that on the electroconducting prosthesis in vitro and in the blood flow a positive electric potential is given, conducive to a rapid precipitation of trace elements and proteins of the blood. On the prosthesis there is formed a firmly-bound autobiological lining preventing the formation of thrombi. The authors conducted 52 experiments in vitro and 30 acute experiments with introduction of an electric potential on the prosthesis in the blood stream. The article contains a detailed description of the technique of forming the lining, as well as the method of recording of the autobiological lining. The biochemical and morphological composition of the lining formed by the galvanic technique was studied.

REEL/FRA  
**19771711**

02 DI

1/2 013  
TITLE--ALCOHOLISM IN SCHIZOPHRENIC PATIENTS -U- UNCLASSIFIED PROCESSING DATE--18SEP70  
AUTHOR--SHUMAKOV, V.M. S  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL NEVROPATOLOGII I PSIKHIATRII IMENI S. S. KORSAKOVA, 1970,  
VOL 70, NR 3, PP 435-444  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--SCHIZOPHRENIA, ALCOHOL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1982/0806 STEP NO--UR/0246/70/070/003/0435/0444  
CIRC ACCESSION NO--AP0052242  
UNCLASSIFIED

2/2 013

CIRC ACCESSION NO. -AP0052242

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE AUTHOR CONVENED A COMPARATIVE CLINICAL AND FOLLOWUP STUDY OF SCHIZOPHRENIC PATIENTS WITH ABUSE OF ALCOHOL (81 CASES) AND ABSTAINING FROM IT. IT WAS DEMONSTRATED THAT AN INCLINATION TO ALCOHOL IN THE MAJORITY OF THE CASES WAS A RESULT OF THE DISEASE AND COULD BE CORRELATED WITH DIFFERENT PSYCHOPATHOLOGICAL FEATURES. IT WAS SHOWN THAT DIFFERENT DEGREES OF ALCOHOLISM WERE SEEN AMONG DIFFERENT FORMS OF SCHIZOPHRENIA. ALCOHOL, IN ITS TURN, INFLUENCES THE PSYCHOPATHOLOGICAL STRUCTURE AND DEVELOPMENT OF THE DISEASE. THIS INFLUENCE ALSO DEPENDS UPON THE FORM OF SCHIZOPHRENIA, THE STAGE OF THE DISEASE, AND INDIVIDUAL TRAITS. THE PAPER DEALS WITH OUTPATIENT AND HOSPITAL TREATMENT OF SCHIZOPHRENIA WITH ALCOHOLISM AND THE PREREQUISITES FOR A MORE EFFICACIOUS THERAPY AND ORGANIZATION OF SOCIAL AID TO SUCH PATIENTS.

UNCLASSIFIED

Pesticides

USSR

UDC 632.937

NOVOZHILOV, K. V., and SHUMAKOV, YE. M.

"Biological Method of Pest Control and Contemporary Chemistry"

Moscow, Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva imeni D. I. Mendeleev,  
Vol 18, No 5, 1973, pp 545-552

Abstract: A review with 66 references discussing the spectrum of entomological pest control agents. The early direction of the research in this area, reaching into preceding century, was aimed at natural enemies of the pests. However, the microbiological control method appeared to be effectively used only in the U.S.A. and USSR. The next research period was aimed at bacteria, viruses, fungi on one hand, and at chloroorganic compounds with specific selective activity on the other. The most recent direction in the research effort is aimed at genetic methods, the so called sterile male technique, discovery of which the authors attribute to A. S. Serebrovskiy. The most recent achievement in the fight to control pests is the development of new lines of insects with complex chromosomes, synthesis of sex attractants -- the pheromones -- and finally synthesis of sex hormones.

1/1

UDC 576.895.1(0:01)

USSR

SHUMAKOV, Ye. Ye., Compiler, and SKRYABIN, K. I., Editor

Stroitel'stvo Gel'mintologicheskoy Nauki i Praktiki v SSSR (Development of Helminthology and Practical Applications in the USSR), Vol 5, Bibliography, Moscow, "Nauka," 1972, 619 pp

Translation: Annotation: This volume lists the Soviet publications on general, medical, and veterinary helminthology from 1961 to 1967 that were used in discussing various aspects of helminthology in volumes 1 to 4 in the series Stroitel'stvo Gel'mintologicheskoy Nauki i Praktiki v SSSR, 1963-1969.

The book is aimed at helminthologists, veterinarians, physicians, zoologists, and biologists of all kinds.

Table of Contents

Foreword

Principal abbreviations

Soviet Literature on Helminthology, 1961-1967

Part I. Works published from 1961 to 1965

List of works 1961-1965

Anonymous literature

1/2

Page

3

4

5

374

USSR

SHUMAKOV, Ye. Ye., and SKRYABIN, K. I., Stroitel'stvo Gal'mintologicheskoy  
Nauki i Praktiki v SSSR, Vol 5, Bibliography, Moscow, "Nauka," 1972, 619 pp

	Page
Articles of Soviet helminthologists published in the international journal Helminthologia (Volumes I-VI, 1959-1965)	381
Additions	388
Index	396
Part II. Work published in 1966 and 1967	429
Lists of works 1966-1967	594
Anonymous literature	596
Additions	601
Index	

2/2

- 120 -

USSR

UDC 621.382.3

GREKHOV, I.V., KONAKOVA, R.V., SHUMAN, V.B.

"Operating Principle of a Multicollector Photothyristor"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 4, No 5, 1970, pp 969-970

Abstract: This article contains a discussion of the operating principle of a multicollector photothyristor. The advantages of the multicollector photothyristor over the four-layer photothyristor are discussed. It is pointed out that the photosensitivity of the multicollector structure exceeds the sensitivity of the four-layer photothyristor several times. Curves are presented for the relative sensitivity as a function of depth of the collector p-n junction of the two-collector photothyristor. Current and voltage diagrams are presented for the two-collector photothyristor during the inclusion process. From these diagrams it is obvious that the transient process of inclusion of the multicollector photothyristor is subdivided into two sections: the first represents inclusion of the  $n_1-p_1-n_2-p_2$  structure, and the second, inclusion of the  $n_2-p_2-n_3-p_3$  structure. With an increase in steepness of growth of the light flux or an increase in radiation power from the GaAs of the diode the steepness of the inclusion front increases in both sections. This indicates the increasing magnitude of the capacitive current of the multicollector structure and, consequently, the decrease in inclusion

time of the structure. The magnitude of the capacitive current can be  
1/2

USSR

GREKHOV, I.V., et al., Fizika i Tekhnika Poluprovodnikov, Vol 4, No 5, 1970,  
pp 969-970

estimated at 100 milliamps on the basis of known values of  $C_2 \sim 200$  picofarads and  $dV/dt \approx 500$  volts/microseconds. This estimate of the capacitive current indicates that its magnitude exceeds that of the minimum inclusion current of the multicollector structure controlled by an electric pulse (on the order of a milliampere for the investigated structures) by several times. Thus, the presence of the  $dV/dt$  effect in the multicollector structure permits an increase in photosensitivity of the multicollector photothyristor by comparison with the four-layer photothyristor. The dependence of the inclusion time of the multicollector structure on the electrophysical and circuit parameters has the same nature as in the n-p-n-p photothyristor.

2/2

- 43 -



USSR

UDC 621.315.59

SHUMAN, V. B., Physicotechnical Institute imeni A. F. Ioffe of the USSR Academy of Sciences, Leningrad

"Spectral Dependence of the Absorption Coefficient in Si <Au>"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972, pp 940-943

Abstract: Light absorption in the deep level in Si has been studied in Si<Zn> [B. V. Kornilov, FTT, No 5, 3305, 1963] and Si<Co> [M. K. Bakhadyrkhanov, et al., FTT, No 11, 3660, 1969]. The  $\sigma_p$  and  $\sigma_n$  cross sections of photoionization of Au in Si were obtained from an analysis of the kinetics of the admixture photocurrent in the -56 to -70°C range, and the spectral dependence of  $\sigma_p$  and  $\sigma_n$  were obtained in the  $h\nu = 0.55-0.85$  electron volt range [A. Tash, et al., Phys. Rev., B1, 800, 1970]. Now the values of  $\sigma_p$  and  $\sigma_n$  have been obtained from measuring the transmission of Si<Au> in the  $h\nu = 0.3-1.05$  electron volt range. A study was made of the absorption of light in partially compensated p-Si, partially compensated n-Si and in the neutral Au atoms. Graphs are presented showing the transitions connected with the absorption of light in Si, the spectral functions of the absorption coefficient  $\alpha$  in p-Si and p-Si<Au>, the spectral function of 1/2

- 198 -

USSR

UDC 621.315.59

SHUMAN, V. B., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972, pp 940-943

the absorption coefficient in n-Si and n-Si<Au>, and the spectral dependence of the photoionization cross sections. The experimental procedures and methods of calculating the curves are described. The mechanisms of the effects of producing the plotted data are analyzed.

USSR

UDC 621.38.836.112.15c24

BERKOVSKAYA, K.F., KIRILLOVA, N.V., KONAKOVA, R.V., KRASYUK, B.A., MESKIN, S.S.,  
RAVICH, V.N., SOBOLEV, V.I., SHUMAN, V.B.

"Optoelectronic Pair, Light-Emitting Diode--Photthyristor: New Element Of  
Electronic Apparatus"

V sb. Mikroelektronika (Microelectronics--Collection Of Works), Moscow, Izd-vo  
"Sovetskoye Radio," No 4, 1971, pp 216-228.

Abstract: The possibilities are analyzed of a new type of optoelectronic pair, GaAs light-emitting diode--Si photthyristor. The characteristics and parameters are furnished of light-emitting diodes and photthyristors of various types. The possibilities of their optimum combination are considered. Specific regimes of operation are recommended and the parameters of the optoelectronic pair are presented for three regimes of operation. 6 fig. 3 tab. 8 ref.

1/1

- 36 -

USSR

UDC 629.78:533.1

CHEKALIN, E. K., SHUMANOV, V. S., AFINOGENOV, YE. P.

"Interaction of an Ionized Metal Vapor Flow with a Body at  $M > 1$ "

V sb. Teplofiz. svoystva i gazodinamika vysokotemperatur. ored. (Thermophysical Properties and Gas Dynamics of High-Temperature Media--collection of works), Moscow, Nauka, 1972, pp 96-106 (from RZh-Raketostroyeniye, otdel'nyy vypusk, No 12, Dec 72, Abstract No 12.41.122)

Translation: The experimental results of studies of sonic and supersonic flows of ionized copper and lithium vapors are discussed. A description was given of contact methods of measuring the flow parameters. The flow velocity, the Mach number, the temperature, the density and pressure of an erosion plasma flux which was formed during electric explosion of a wire and electrode erosion were determined by means of two planar oriented calorimeters, a ballistic pendulum, supersonic photography and measurement of the emf induced in the magnetic field. The results of the studies were checked by other methods, for example, by the Stark broadening of the  $H_\beta$  hydrogen spectral line. There are 5 illustrations, 1 table and a 15-entry bibliography.

1/1

- 37 -

USSR

UDC 681.3.001:518.5

SLIPCHENKO, V. G., SHUMAKOVA, L. A.

"An Algorithm for Calculating Determinant with Complex Elements"

Vestn. Kiyevsk. politekh. in-ta. Ser. avtomatiki i elektronpriborostr. (News of Kiev Polytechnical Institute. Automation and Electronic Instrument Building Series), 1970, No 7, pp 105-107 (from RZh-Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 2, Feb 71, Abstract No 2B37)

Translation: An algorithm is described for calculating a determinant with complex elements by excluding the elements in successive rows. It is convenient to use the characteristic features of calculating the determinant when analyzing electronic circuit functions. The bibliography has 2 entries.

1/1

1/2 014 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--STATISTICAL PROPERTIES OF THE THERMAL STRATIFICATION OF THE  
TROPOSPHERE AND LOWER STRATOSPHERE -U-  
AUTHOR--(02)--PINUS, N.Z., SHUMANSKAYA, YE.F.  
COUNTRY OF INFO--USSR  
SOURCE--METEOROLOGIYA I GIDROLOGIYA, 1970, NR 5, PP 3-13  
DATE PUBLISHED-----70  
SUBJECT AREAS--ATMOSPHERIC SCIENCES  
TOPIC TAGS--TROPOSPHERE, STRATOSPHERE, ATMOSPHERIC STRATIFICATION,  
AUTOCORRELATION FUNCTION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PRUXY REEL/FRAE--3005/0081 STEP NO--UR/0050/70/000/005/0003/0013  
CIRC ACCESSION NO--AP0132374  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132374

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EMPIRICAL AUTOCORRELATION  
FUNCTIONS OBTAINED BY THE AUTHORS FOR PULSATIONS OF THE TEMPERATURE  
LAPSE RATE IN THE ATMOSPHERIC LAYER TAKEN FROM THE EARTH'S SURFACE UP TO  
18 KM ARE GIVEN IN THE ARTICLE. PECULIARITIES OF THESE FUNCTIONS AT THE  
BACKGROUND OF VERTICAL PROFILES OF THE MEAN TEMPERATURES LAPSE RATE ARE  
ANALYSED, CONTRIBUTION TO THE DISPERSION OF LAPSE RATE FLUCTUATIONS OF  
DIFFERENT TIME SCALES IS ESTIMATED. FACILITY: TSENTRAL'NAYA  
AEROLOGICHESKAYA OBSERVATORIYA.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--USE OF UREA TO DYE BLUE COTTON FIBERS -U-  
AUTHOR-(04)-DANSHINA, M.I., DOKIN, K.A., SLADKOPEVTSEVA, G.E., SHUMARINA,  
A.V.  
COUNTRY OF INFO--USSR  
SOURCE--TEKST. PRON. (MOSCOW) 1970, 30(3), 73  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--UREA, DYE, NATURAL FIBER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1262 STEP NO--UR/0342/70/030/003/0073/0073  
CIRC ACCESSION NO--AP0128670  
UNCLASSIFIED



2/2 009 UNCLASSIFIED PROCESSING DATE--13NOV70  
CIRC ACCESSION NO--AP0128678  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UREA (I) CAN BE USED AS AN  
ADDITIVE (INSTEAD OF (NH SUB4) SUB2 SO SUB4) DURING BATCH AND CONTINUOUS  
DYEING OF COTTON FIBERS. ADDN. OF 2-3 G-L. I TO THE DYEING MIXT.  
IMPROVED THE SELECTIVITY AND REDUCED THE CONSUMPTION OF DYES BY SIMILAR  
TO 10PERCENT. FACILITY: IVANOV. MELANZHEVYI KOMB. IM. FROLOVA,  
IVANOVO, USSR.

UNCLASSIFIED

USSR

UDC: 621.396.6:621.315.61

LUDUPOV, Ts. Zh., IVANOV, V. F., ANIKIN, I. N., SHUMARINA, Ye. I.  
"Dielectric Properties of Artificial Mica Along the Plane of Cleavage on  
Superhigh Frequencies"

Elektron. tekhnika. Nauchno-tekhn. sb. Materialy (Electronic Technology.  
Scientific and Technical Collection. Materials), 1970, vyp. 3, 52-57  
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 127418)

Translation: The authors give the results of measurement of complex per-  
mittivity along the plane of cleavage parallel to crystallographic axes  
 $a$  and  $b$  in fluorophlogopite by a waveguide method in the millimeter and  
centimeter ranges. Artificial mica is investigated in the 20-200°C tem-  
perature range on a frequency of  $10^{10}$  Hz. Resumé.

1/1

1/2 009  
UNCLASSIFIED  
TITLE--MECHANICALLY STRONG CATALYSTS FOR LIQUID PHASE HYDROGENATION -U-  
PROCESSING DATE--27NOV70  
AUTHOR--(05)-SOKOLSKIY, D.V., ZHUBANOV, K.A., SHUMAYEVA, N.F., GOGOL, N.A.,  
KRUPENYA, N.G.  
COUNTRY OF INFO--USSR  
SOURCE--U.S.S.R. 264,354  
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970  
DATE PUBLISHED--03MAR70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CATALYST, HYDROGENATION, CHEMICAL PATENT, GYPSUM, MECHANICAL  
PROPERTY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3007/0827  
STEP NO--UR/0482/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0136261  
UNCLASSIFIED

2/2 009 UNCLASSIFIED PROCESSING DATE--27NOV70  
CIRC ACCESSION NO--AA0136261  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MECH. STABLE CATALYSTS ARE PREPD.  
BY ADDING A GYPSUM BINDER TO THE CATALYST. FACILITY: INSTITUT  
KHIMICHESKIKH NAUK AN KAZAKHSKOY SSR.

UNCLASSIFIED 5

1/2 017 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--DIFFUSION OF HYDROGEN TO THE SURFACE OF A STATIONARY CATALYST  
DURING THE HYDROGENATION OF FATS -U-  
AUTHOR-(03)-ZHUBANOV, K.A., SHUMATEVA, N.F., SOKOLSKIY, D.V.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK KAZ. SSR, SER. KHIM. 1970, 20(2), 31-2  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--CATALYTIC HYDROGENATION, VEGETABLE OIL, NICKEL, RHODIUM, METAL  
CATALYST, CHEMICAL REACTION RATE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3008/1732 STEP NO--UR/0360/70/020/002/0031/0032  
CIRC ACCESSION NO--AP0138705  
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0138705

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DURING THE HYDROGENATION OF COTTONSEED OIL AT ATM. PRESSURE IN THE PRESENCE OF NI RH CATALYST, THE DIFFUSION VARIED FROM 0.423 ML-MIN AT 110DEGREES TO 2.59 ML-MIN AT 190DEGREES IN THE COUNTERCURRENT MODE, AND FROM 0.158-0.199 ML-MIN TO 1.008 ML-MIN, RESP., IN THE JET MODE. THE HYDROGENATION CONSUMED 0.215-0.473 ML-MIN AND 0.15-0.45 ML-MIN, RESP. THE CONTACT TIME HAD LITTLE EFFECT ON THE HYDROGENATION VELOCITY. FACILITY: INST. KHIM. NAUK, ALMA-ATA, USSR.

UNCLASSIFIED

1/2 018

UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--REACTIONS OF BENZYL ALCOHOL UNDER CONDITIONS FOR THE SYNTHESIS OF  
ALIPHATIC COMPOUNDS FROM CARBON MONOXIDE AND HYDROGEN --U-

AUTHOR--(104)--KRYUKOV, YU.B., SHUIKIN, A.N., SHUMAYEVA, Z.T., BASHKIROV,  
A.N.

COUNTRY OF INFO--USSR

SOURCE--NEFTEKHIMIYA 1970, 10(1), 83-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--BENZYL ALCOHOL, CATALYTIC ORGANIC SYNTHESIS, METAL OXIDE,  
CARBON MONOXIDE, HYDROGEN, GAS CHROMATOGRAPHY, BENZENE DERIVATIVE,  
ETHANOL, PROPANOL, HYDROGENATION, HYDROCARBON SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1883

CIRC ACCESSION NO--AP0112863

STEP NO--UR/0204/70/010/001/0083/0087

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112863

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHCH SUB2 OH-CO-H WAS PASSED OVER  
A FE SUB2 O SUB3-AL SUB2 O SUB3-V SUB2 O SUB5-K SUB2 O CATALYST AT  
450DEGREES-50 ATM DURING 12 HR AND THE PRODUCTS WERE DISTD. AND ANALYZED  
BY GAS LIQ. CHROMATUG. PHCH SUB2 OH WAS, IN PART, CONVERTED DIRECTLY TO  
PHME, BZH, AND BIBENZYL. CHAIN FORMATION TO 2,PHENYLETHANOL,  
3,PHENYLPROPANOL, AND HIGHER HOMOLOGS AND HYDROGENATION OF THESE TO THE  
CORRESPONDING HYDROCARBONS ALSO OCCURRED. FACILITY: INST.  
NEFTEKHIM. SIN. IM. TOPCHIEVA, MOSCOW, USSR.

UNCLASSIFIED



USSR

TRAKHTENGERTS, E. A., SHUMEY, A. S.

"Equivalent Transform of Generating Grammars into Priority Grammars"

Zh. vychisl. mat. i mat. fiz. [Journal of Computer Mathematics and Mathematical Physics], 1973, 13, No 2, pp 446-455 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V731 by V. Shevyakov)

Translation: The priority is studied for any type 0 grammar, not only context-free grammars. An algorithm is constructed converting any grammar into a grammar with simple priority. This algorithm, in the portion concerning elimination of priority conflicts, agrees with that described by J. Macaffey and L. Presser (Journal ACM, 1972, 19, No 5) for context-free grammars.

1/1

USSR

UDC: 631.2:621.317.326

ABROSIMOV, I. L., KRYNIN, N. M., NEUSTROYEV, L. S., and SHUMEYKO, L. V.

"Device for Measuring Instantaneous Values of Pulse Voltages"

Moscow, Izmeritel'naya Tekhnika, No. 7, 1970, pp 48-50

Abstract: The instrument was developed by the VNIIFTRI /expansion unknown/ and uses the compensation method with an electron-beam null indicator. It is highly accurate for pulse voltages of microsecond and nanosecond duration. The null indicator consists of an oscillograph tube, the screen of which has an opening at the center instead of a luminescent screen, and an electron multiplier behind the screen. The opening is on the electrical axis of the electron gun. The signal to be measured and a compensating signal of opposite polarity are applied to the vertically deflecting plates of the indicator, with a sawtoothed voltage applied to the horizontally deflecting plates. The path sketched by the beam is thus the difference between the measured and compensating signals as a function of time. When the difference is close to zero, the electrons are directed through the opening to the first dynode of the multiplier. When the beam center coincides with the opening, the pulse at the output of the unit is a maximum; with a deviation of the beam away from the opening, the output amplitude is reduced. Known  
1/2

- 151 -

USSR

ABROSIKOV, I. L., et al, Izmeritel'naya Tekhnika, No. 7, 1970, pp 48-50  
as the IIN-3M, the instrument measures the instantaneous values of pulses ranging  
in duration from 0.1 to 10,000  $\mu$ s and in amplitude from 0.1 to 100 volts.

USSR

UDC: 539.3

SHUMIK, M. A., Moscow

"Stability of Conical Shells with Dynamic Longitudinal Compression"

Kiev, Prikladnaya Mekhanika, Vol 6, No 11, 1970, pp 122-126

Abstract: The critical stress is studied as a function of geometric and mechanical parameters of the shell and the loading rule. It is demonstrated that with intensive dynamic longitudinal compression, the form of the loss of stability is axisymmetrical, while the critical stress and its momentum are determined by the thickness, ratio of radii of the bases and mechanical parameters of the shell.

1/1

USSR

FILIPPOVICH, V. I., SHUMIKHIN, S. L., Scientific Research Institute for Physiology of Children and Adolescents, Academy of Pedagogical Sciences USSR, and GRISHIN, V. N., Moscow Institute of Energetics

"A Method for Research on Human Motor Behavior Under Changing (Stochastic) Conditions"

Moscow, Teoriya i Praktika Fizicheskoy Kul'tury, No 2, 1972, pp 66-69

Abstract: This method permits the study of human motor behavior under conditions which demand well-timed and precise movements of varying degrees of complexity for the purpose of learning how to increase man's ability to control his movements under various conditions. The method employs the following apparatus (fig. 1): The apparatus consists of two identical, independent assemblies, each containing two concentric rotating shafts, and a tensometric platform one meter square. The two assemblies, placed 2.5-3m apart, rotate two horizontal rods which serve as obstacles. The height and speed of the rods will depend on the parameters of the movement problem. The height of the lower rods is variable from 5cm to 1m, the upper, from 1-2m. The speed of rotation is variable from 10-120 rpm. A safety device protects the subject in the event of contact with any rod. The spatial

1/2

- 50 -

USSR

FILIPPOVICH, V. I., et al., Teoriya i Praktika Fizicheskoy Kul'tury, No 2, 1972, pp 66-69

parameters of the subject's movements are registered by a pickup which frequency modulates a signal generator according to capacitance changes between antennas (mounted on the rods) and the subject. The signal is detected, amplified, and recorded. The tensometric platform records reactive forces to an accuracy of 5kg. The sequence of rotation of the rods is determined by a program which may be changed during operation. An ink recorder (USCh-8) and oscillograph (K-105) are used for recording data. Measurement devices for collecting data to determine individual characteristics and adaptive behavior, as well as for data on normal bodily functions, may be simultaneously employed. The apparatus may be used for training.

2/2

1/2 013 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--INOCULANT FOR CAST IRON -U-

AUTHOR--(03)-LUZAN, P.P., SHUMIKHIN, V.S., KUCHEMASOV, YU.S.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263,616

REFERENCE--UTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,  
DATE PUBLISHED--10FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL PATENT, CAST IRON, CALCIUM COMPOUND, SILICON  
COMPOUND, CHROMIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--3004/1823

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132088

UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0132088

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CAST IRON INOCULANT CONTAINS A  
FERROCHROMIUM (70PERCENT) BASE AND 30-40PERCENT SILICO-CALCIUM  
(28PERCENT) TO REMOVE CEMENTITE IN THE CAST MATERIAL. FACILITY:  
INSTITUT PROBLEM LIT'YA AN UKRAINSKOY SSR.

UNCLASSIFIED



USSR

UDC: 621.397

SHUMIKHIN, Yu. A.

"Television in Science and Technology"

Televideniye v nauke i tekhnike (cf. English above), Moscow, "Energiya", 1970, 304 pp, ill. 1 r. 3 k. (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12G112 K)

Translation: The book discusses the general principles of TV transmission, the properties and characteristics of TV images and signals, and also the basic qualitative indices of television systems, principles of design and circuitry for fundamental TV units, and problems in utilizing TV systems. The book is written for an extensive class of readers acquainted with basic radio electronics and interested in the problems of utilizing TV in science and technology. Annotation.

1/1

- 156 -

USSR

UDC 632.952 + 631.8:635.965.282.6

SHUMILENKO, Ye. P., Sverdlovsk Agricultural Institute

"Disinfection of Gladiolus Tuber Bulbs From the Pathogenic Agents of Fungal and Bacterial Diseases"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 11, No 8 (118), 1973, pp 45-47

Abstract: Autumn application of the suspensions of granozan (0.2%), tsineb (0.4%) and TMTD (0.6%) on gladiolus tuber bulbs lowered considerably their vulnerability toward various diseases. Positive results were also obtained by dipping the tuber bulbs for 5 hrs prior to the planting in solutions containing fungicides and microelements. The most effective agent for the van Gogh sort was a combination of quinozole and copper sulfate, and for the Summer Joy sort -- TMTD with copper sulfate.

1/1

- 35 -

1/2 010 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--CORRELATION OF THE LENGTHS OF THE ZONES OF HIGH TEMPERATURE TUNNEL  
KILNS -U-  
AUTHOR-(03)-SHUMILIN, A.A., ABBAKUMOV, V.G., TARAKANCHIKOV, G.A.  
COUNTRY OF INFO--USSR S  
SOURCE--OGNEUPORY 1970, 35(3), 8-15  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--INDUSTRIAL FURNACE, REFRACTORY MATERIAL  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1996/0894 STEP NO--UR/0131/70/035/003/0008/0015  
CIRC ACCESSION NO--AP0118063  
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118063

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HITHERTO USED LENGTHS OF THE PREHEAT, FIRING, AND COOLING ZONES OF TUNNEL KILNS FOR FIRING MAGNESITE PRODUCTS ARE NOT OPTIMUM. IMPROVEMENT OF THE EFFICIENCY OF FURNACES IS POSSIBLE BY CHANGING LENGTHS OF ZONES. THE PREHEAT ZONE CAN BE SHORTENED BECAUSE ONE CAN ACCELERATE THE HEATING OF THE MAGNESITE PRODUCTS IN THIS ZONE DEPENDING ON THE HEAT TRANSFER AND PRODUCT CHARGING RATES. ON SHORTENING THE PREHEATING ZONE, THE COOLING ZONE CAN BE EXTENDED. FACILITY: VSES. INST. OGNEUPOR., LENINGRAD, USSR.

UNCLASSIFIED

USSR

5  
SHUMILIN, A. A., ABBAKUMOV, V. G., TARAKANCHIKOV, G. A.

"The Problem of the Relationship of Zone Lengths in a High-Temperature Tunnel Furnace"

Moscow, Ogneupory, No 3, Mar 70, pp 8-15

Abstract: The relationship of heating, roasting, and cooling zone lengths in existing high-temperature tunnel furnaces for roasting of magnesium products is not optimal. This creates reserves for the improvement of the operation of the furnace, by optimization of the relationship of zone lengths. The heating zone in a high-temperature tunnel furnace generally completes the heat exchange process and then includes some additional length. This zone can be shortened without any damage to the operation of the furnace, allowing an increase in the cooling zone length.

1/1

- 50 -

USSR/Mil/RU

An item states that  
SHUMILIN, B. T., Dep Min, Internal Affairs USSR, spoke at a premiere of a new  
film in Moscow.

Sovetskaya Rossiya, 12 Nov 72, p 4, col 5

(1)

USSR M1/RU

Dateline Moscow, 25 Jan 72

The article "For You, Drivers and Pedestrians" concerns the opening in Moscow at the Central Club of the Ministry of Internal Affairs USSR of the First All-Union Exhibition of Means of Mass Propaganda of Traffic Safety Rules. It was organized by the State Automobile Inspection of the Ministry of Internal Affairs USSR. In a speech at the opening of the exposition

SHUMILIN, B. T., Dep Minister of Internal Affairs USSR,

stated that the exhibition is a link in a series of measures which are being conducted for traffic safety in the country. He noted that the State Automobile Inspection uses helicopters, computers, radar and television, and modern communications equipment in its work. As a result of this they have obtained the capability for influencing the organization of the process of the movement of vehicles and pedestrians. The exhibition, where there are exhibits from eight Union republics and nine cities of the Russian Federation, has attracted much attention.

Moskovskaya Pravda, 26 Jan 72, p 4, col 1

(1)

the bonding layer to 60-80° by bubbling gas or air through a layer of material. Cooling with H<sub>2</sub>O passed through soil, annealed in a layer of the material takes place simultaneously. MQCL 4-1

1/1

1237

180°

7



"APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R002203010014-8

1/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--INVERSION OF VAPOR PHASE COMPOSITION OVER A PRIME III B PRIME V TYPE  
SEMICONDUCTOR COMPOUNDS -U-  
AUTHOR--(04)-UFIMTSEV, V.B., KRESTOVNIKOV, A.N., KOSTIN, G.V., SHUMILIN,  
V.P.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. FIZ. KHIM. 1970, 44(5), 1360  
DATE PUBLISHED-----70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--SEMICONDUCTOR MATERIAL, INDIUM, GALLIUM, ANTIMONY, ARSENIC,  
PHOSPHORUS, VAPOR STATE, PHASE COMPOSITION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3007/0890 STEP NO--UR/0076/70/044/005/1360/1360  
CIRC ACCESSION NO--AP0136324

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001

CIA-RDP86-00513R002203010014-8"

AA9029265

CA 8/69

UP 0 982

2/2 026

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0136324

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EQUIL. VAPOR PRESSURES OF B SUB2  
PRIMEV AND B SUB4 PRIMEV OVER A PRIMEIII B PRIMEV SOLIDS WERE CALCD.  
FROM KNOWN THERMODYNAMIC PROPERTIES AND CORRELATED BY THE EQUATION  $\log P$   
EQUALS MINUS (A-T) PLUS B FOR A PRIMEIII EQUALS IN OR GA AND B PRIMEV  
EQUALS SB, AS, OR P. THE VALUES OF A ARE GREATER FOR B SUB4 THAN FOR B  
SUB2 OVER A PRIMEIII B PRIMEV WHILE WITH PURE SOLID B, THE REVERSE IS  
TRUE. FACILITY: MOSK. TEKHNOL. INST. STALI SPLAVOV, MOSCOW,  
USSR.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--DISSOCIATION PRESSURE FOR INDIUM PHOSPHIDE AND GALLIUM PHOSPHIDE  
-U-  
AUTHOR--(04)--UFIMTSEV, V.B., SHUMILIN, V.P., KRESTOVNIKOV, A.N.,  
VIGDOROVICH, V.N. 5  
COUNTRY OF INFO--USSR  
SOURCE--Zh. Fiz. Khim. 1970, 44(4), 1120-2  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--INDIUM COMPOUND, PHOSPHIDE, DISSOCIATION, PRESSURE, GALLIUM  
COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1999/1171 STEP NO--UR/0076/70/044/004/1120/1122  
CIRC ACCESSION NO--AP0123148  
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123148

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISSOCN. PRESSURES OF INP AND GAP WERE STUDIED BY THE KNUDSEN EFFUSION METHOD AT T 879-1011DEGREES K FOR INP AND 1030-1223DEGREESK FOR GAP. THE RESULTS ARE TABULATED. APPLICATION OF THE LEAST SQUARE METHOD TO THE EXPTL. DATA PRODUCED THE FOLLOWING EQUATIONS THAT DESCRIBE THE TEMP. DEPENDENCE OF P VAPOR PRESSURE OVER SOLID INP AND GAP:  $\log P$  (MM HG) EQUALS (MINUS10,859 PLUS OR MINUS 366-T) PLUS (9.9241 PLUS OR MINUS 0.0699) FOR INP;  $\log P$  (MM HG) EQUALS (MINUS 14,150 PLUS OR MINUS 179-T) PLUS (11.0000 PLUS OR MINUS 0.0722) FOR GAP. THE HEAT OF SUBLIMATION DERIVED FROM THESE EQUATIONS IS  $\Delta H_{\text{SUB}}$  945DEGREES EQUALS 49.691 PLUS OR MINUS 1.675 FOR INP AND  $\Delta H_{\text{SUB}}$  1126DEGREES EQUALS 65.750 PLUS OR MINUS 0.819 FOR GAP. FACILITY: MOSK. INST. STALI SPLAVOV, MOSCOW, USSR.

UNCLASSIFIED

Inorganic Compounds

USSR

UDC 541.11

UFIMTSEV, V. B., SHUMILIN, V. P., KRESTOVNIKOV, A. N., and VIGDOROVICH, V. N., Moscow Institute of Steels and Alloys

"Dissociation Pressure of Indium and Gallium Phosphides"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 4, Apr 70, pp 1120-1122

Abstract: An experimental study of the dissociation pressure of indium and gallium phosphides in the solid state using Knudsen's effusion method is described.  $\lg p = -A/T + B$ -type equations were derived and heats of sublimation determined. Tables in the original article show the rated characteristics of the vapor phase for indium phosphide and data on the temperature dependence of the dissociation elasticity of indium and gallium phosphides. Evaluation of the experimental data by the method of least squares yielded equations describing the temperature dependence of phosphorus vapor pressure. The heats of sublimation derived from these equations are:

$\Delta H_{945} = 49.691 \pm 1.675$  (for InP) and  $\Delta H_{1126} = 65.750 \pm 0.819$  kcal/mole (for GaP).  
1/1

USSR

UDC 621.315.592:546.688'.86

VIGDOROVICH, V.N., UFIMTSEV, V.B., SHUMILIN, V.P.

"Isobaric-Isothermic Potential And Width Of Forbidden Zone Of Semiconductor Solid Solutions Of Type A<sup>III</sup>BY--A<sup>III</sup>BY"

Sb. nauch.tr. po probl. mikroelektron. Mosk.in-t elektron.tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electronics Technology), 1972, Issue 8, pp 137-143 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 1972, Abstract No 9B98)

Translation: The values are calculated of the isobaric-isothermic potentials of the formation of solid solutions of InSb-GaSb, InAs-GaAs, and InP-GaP at a temperature of 298° K, and of the pressure of the saturated vapors of the corresponding compounds. The values of  $\Delta G^{mix}$  for solid solutions are determined from the results of a study of the vapor pressure above the solid solutions and from a calculated analysis of phase diagrams. A good fix is shown of the calculated values of the isobaric-isothermic potentials of the formation of compounds and solid solutions at  $T = 298^\circ K$  and  $P = P_{AB}$  saturated with the values of the width of the forbidden zone. 15 ref.

1/1

USSR

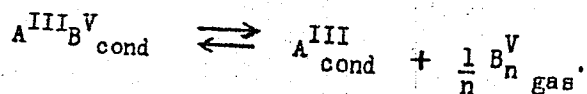
UDC 621.315.592

UFIMTSEV, V.B., SHUMILIN, V.P., KOSTIN, G.V., KRESTOVNIKOV, A.N.

"Concerning The Character Of The Change Of Composition Of The Vapor Phase Above Type A<sup>III</sup>B<sup>V</sup> Compounds"

Sb.nauch.tr.po probl. mikroelektron. Mosk. in-ta elektron. tekhn. (Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electronics Technology), 1972, Issue 8, pp 131-136 (from RZh:Elektronika i yeye primeneniye, No 9, Sept 1972, Abstract No 9B100)

Translation: The paper considers the inverse character of the vapor phase during replacement of the condensate of the element B<sup>V</sup> by the condensate of the compounds A<sup>III</sup>B<sup>V</sup>. From thermodynamic data the temperature dependences are calculated of the vapor pressure of 2- and 4-atom molecules of component B<sup>V</sup> above the six compounds: InSb, GaSb, InAs, GaAs, InP, and GaP. Calculations are made for the reactions



USSR

UDC 534.647:621.83:389

TAYTS, B. A., TSEYTLIN, S. I., and SHUMILIN, V. V.

"Metrological Problems in the Seismic Method of Gauging Nonuniformity and Inconsistency in the Motion of Elements of Kinematic Chains"

Khar'kov, Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972 -- sb. (Ukrainian Republic Scientific and Technological Conference Honoring the 50th Anniversary of the Ukrainian SSR's Metrological Service, 1972 -- Collection of Works), 1972, pp 178-179 (from Referativnyy Zhurnal -- Metrologiya i Izmeritel'naya Tekhnika, No 2, 1973, Abstract No 2.32.521)

Translation: The authors have worked out two models of a device for measuring nonuniformity and inconsistency in the rotation of a table and a tool. The set consists of two seismic angular oscillators fitted with individual amplifying channels, an electronic adder with scale multiplication of the components according to the gear ratio, and a three-channel recorder. Differential-transformer inverters are used in the sensors. In order to calibrate the seismic device, the authors developed a calibrator consisting of a platform with spring suspension that makes angular vibrations when acted upon by a pair of electrodynamic oscillators. The induced vibrations are controlled by a  
1/2



USSR

TAYTS, B. A., et al., Ukr. resp. nauch.-tekhn. konf., posvyashch. 50-letiyu metrol. sluzhby USSR, 1972, pp 176-179

precision induction-transformer displacement inverter. The authors provide for certification of the control equipment in the statistical mode by using standard linear and angular measures, as well as spring-actuated contact comparator heads in the lower part of the spectrum. Identity of the amplitude and phase characteristics of both measuring circuits (including the sensors) affects the adder error, which is quite substantial in the frequency band close to the sensor's natural frequency, where these diagrams are steepest. Dynamic errors in the recorder are primarily caused by its amplitude-frequency characteristics. A detailed investigation of the metrological problems involved in the seismic method is of pressing importance.

2/2

- 62 -

USSR

UDC 612.821.6

SHUMILINA, A. I., Institute of Normal and Pathological Physiology, Academy of Medical Sciences USSR, Moscow

"Afferent Synthesis as the Initial Stage of a Behavioral Act"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlov, Vol 23, No 2, Mar/Apr 73, pp 282-288

Abstract: Cortical-subcortical reverberation of excitation is the result of an active-scanning, centripetal analysis which evaluates the peripheral reaction on various levels of dispersion, effecting a more reliable selection of information necessary for a new afferent synthesis and formulation of an appropriate program of action. Experimental data indicate that the frontal lobes of the brain are concerned with preserving various afferent impulses in the form of a synthesized unit. Frontolobotomized dogs placed in a familiar room with two feeding windows are no longer able to watch for conditioned signals indicating the window at which food will be served but continuously move in a pendular fashion from one window to the other. Frontolobotomy disturbs afferent synthesis, which serves as the basis for formulating the purpose of action and making an appropriate decision on the action to be taken in order to attain that purpose. The pre-trigger integration, achieved through synthesis of motivational

1/2

USSR

SHUMILINA, A. I., Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlov,  
Vol 23, No 2, Mar/Apr 73, pp 282-288

and circumstantial excitation, is no longer preserved in the latent form until the trigger stimulus (the conditioned stimulus) is perceived but precipitates a behavioral act under the influence of circumstantial afferent stimuli. Thus, due to disturbed synchronization, circumstantial afferent impulses become the trigger impulses. On the other hand, the cortex of the intact brain synthesizes numerous afferent impulses with different functional meanings into an integrated functional system which can be kept in the latent form for a considerable length of time and, only at the appropriate moment, generates a behavioral act adapted to the given situation. This is the true stage of afferent synthesis.

2/2

USSR

UDC 612.822.8:612.397.81:612.143

ANOKHIN, P. K., Member Academy of Sciences USSR, SHUMILINA, A. I., and  
MAMEDOV, A. M., Institute of Normal and Pathological Physiology, Academy of  
Sciences USSR, Moscow

"Characteristics of the Statistical Parameters of the EEG Stress Rhythm of  
the Brain Cortex and Subcortical Formations Under Pain Stress Conditions"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 1, 1973, pp 249-252

Abstract: Measurements by means of a multichannel electroencephalograph  
were carried out on unanesthetized rabbits in which a pain stress was pro-  
duced by subjecting a hind leg to the action of an electric current. The  
EEG data were subjected to a cross-correlation analysis on being fed into  
a computer. Under the effect of the pain stress, the animals exhibited  
shortness of breath and an accelerated heart activity. Their behavior became  
disturbed and aggressive. The data obtained by EEG measurements indicated  
that the level of functioning of the cortex was lowered. This reduced the  
regulatory action of the cortex on the subcortical formations with the result  
that a persistent excitation of the reticular formation and the hypothalamus  
was produced. An interrelation of this type beings about pathological shifts  
in the functioning of various systems of the organism, specifically that of the  
cardiovascular system.

USSR

UDC 612.825.54-06

SHUMILINA, A. I. and BURZA, Zh. R., Institute of Normal and Pathological Physiology, Academy of Medical Sciences USSR, and First Moscow Medical Institute imeni I. M. Sechenov

"Late Reactions of the Visual Cortex to the Convergence of Light and Electrical Stimulation"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 2, 1973, pp 3-5

Abstract: Rabbits with chronically implanted electrodes in different brain structures were exposed to light flashes and, simultaneously or at various intervals thereafter, electrical stimulation (10 to 15 v) of the hind paw. The effect of electrical skin stimulation on evoked potential of the visual cortex and hippocampus, reticular formation, etc. varied with the current intensity and length of time following the light flashes. For example, subthreshold stimulation, sufficient to suppress the late slow oscillations (8 to 10 v), facilitated the positive phase of the primary response and irregularly facilitated the secondary positive oscillations. Intensification of the current inhibited the generation of the late slow oscillations but facilitated the primary response and secondary positive oscillations in most cases. The critical interval between the stimuli required to free the late slow oscillations from the inhibitory effect of skin stimulation was 75 to 100 msec, i.e., the period exceeding 1/2

USSR

SHUMILINA, A. I. and BURZA, Zh. B., Byulleten' Eksperimental'noy Biologii i Meditsiny, No 2, 1973, pp 3-5

the latency of the late slow response. Thus, the interaction of the visual and cutaneous stimuli suppressed the late slow oscillations of evoked potentials when the current was applied during the latency of the late response regardless of whether it represented the inhibitory or excitatory phase of the potential evoked by light. Cutaneous stimulation had the opposite effect on the primary and secondary positive oscillations, i.e., it facilitated them.

2/2

USSR

UDC 612.822.8:612.397.81:612.143

ANOKHIN, P. K., Academician, SHUMILINA, A. I., and MAMETSOV, A. M., Institute of Normal and Pathological Physiology, Academy of Sciences USSR, Moscow

"The Properties of Statistical Parameters of the Tension Rhythm in the EEG of Cerebral Cortex and Subcortical Formations During Stress Caused by Pain"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 1, 1973, pp 249-252

Abstract: Experiments conducted on unanesthetized rabbits with implanted electrodes revealed that during perception of pain (painful electrical stimuli of 10-sec duration applied to a hind paw at irregular intervals of 30 sec to 2 min) -- and, after a while, also in anticipation of pain -- a considerable phase shift develops in the electrograms as a result of the tension rhythm in the sensorimotor cortex becoming delayed up to 0.5 cycle as compared with the posterior hypothalamus. The cross correlation coefficient is reduced to 0.2 (from 0.3-0.8 in the control state), while the dispersion of the cortical tension rhythm is lowered to 0.5 (from 5-10). All these parameters are indicative of a considerable decrease in the activity of the cortex. At the same time, close functional ties are established between the reticular formation and the posterior hypothalamus, as manifested in full synchronization of slow waves, a rise in the cross correlation coefficient up to 0.99, and an increase in dispersion 1/2

USSR

ANOKHIN, P. K, et al, Doklady Akademii Nauk SSSR, Vol 209, No 1, 1973, pp 249-252

to 15-25, which is also indicative of increased excitability. In that stage, the animals are restless and aggressive, and their respiratory rate is increased to 250 and heart rate to 300 per min. Thus, in a stress condition induced by pain, the activity of the cortex is reduced, cortical control over subcortical structures is weakened, and reticular and hypothalamic excitability is increased. This altered functional state of the CNS readily induces pathological changes in the function of various organ systems, especially the cardiovascular system.

2/2



SHUMILINA, G. A.

PHYSIOLOGIC AND HYGIENIC EVALUATION OF EXPERIMENTAL SAMPLES  
OF COSMETICS

Article by V. V. Zhidkov, L. N. Belikov, V. P. Gorobkov,  
G. A. Shumilina and G. M. Komarov. Moscow, Akad. Nauk  
Vostochno-Sibirskiy Biologicheskii i Meditsinskiy Tsentr  
in Spec. Biology and Medicine, Irkutsk, 1971, 22 ill., 112 p.

The composition of the lotions L-210, L-211 and the  
alixirs E-320, E-321 was tested in two isolation chambers ex-  
periments lasting 22 and 30 days in which the atmosphere and  
microclimate were carefully controlled.

In the first experiment there were three groups of sub-  
jects, two in each group. Over a 10-day period the first group  
used L-210 lotion for care of the skin and the hairy part of  
the head; alixir E-320 was used for care of the oral cavity.  
Over a 7-day period the second group used L-211 lotion and  
E-321 alixir, whereas the third group performed all hygienic  
procedures using HBS-3 lotion.

In the second experiment, during the first 17 days the  
three subjects used L-210 lotion and E-320 alixir, on the  
next three days -- lotion HBS-3, and during the concluding  
10-day period -- L-211 lotion and E-321 alixir.

Shaving was with a safety razor and "Vapech" shaving  
creams of the "Hyfano" and "Gyvehoda" types.

The schedule for using these items of personal hygiene  
was drawn up taking into account the restrictions characteris-  
tic for space flights with a duration from one to three  
months. The monthly expenditure by one subject was 75 g of  
lotion, 7 g of alixir, and 10 g of shaving cream.

Over a five-month period we checked the possibility of  
long-term storage of L-211 lotion and E-321 alixir in rooms

SPRS 576.499

14 JULY 72

44

1/2 014  
UNCLASSIFIED  
TITLE--ACTION OF DIVERSE ANALGESICS ON THE PAIN SENSITIVITY OF INFLAMED  
TISSUE -U- PROCESSING DATE--09OCT70  
AUTHOR--(02)-KOMENDANTOVA, M.V., SHUMILINA, Z.I.  
COUNTRY OF INFO--USSR  
SOURCE--FARMAKOL. TOKSTUL. (MOSCOW) 1970, 33(2), 163-5  
DATE PUBLISHED--70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--PAIN, ANALGESIC DRUG, NARCOTIC  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FAME--1994/1169  
STEP NO--UR/0340/70/033/002/0163/0165  
CIRC ACCESSION NO--AP0115188  
UNCLASSIFIED

2/2

014

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0115188

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. NONNARCOTIC ANALGESICS SHOWED INCREASING ABILITY TO ALLEVIATE PAIN IN INFLAMED TISSUE OF RATS IN THE FOLLOWING ORDER: ACETYLSALICYLIC ACID, AMINOPYRINE, PHENACETIN, AND BUTAZOLIDINE. THE PAIN ALLEVIATING EFFECT DID NOT CORRELATE WITH THE ANTIINFLAMMATORY ACTION OF THESE COMPS. AND, WHEN MEASURED ON INFLAMED TISSUE, QUANT. EXCEEDED THAT OF NARCOTIC ANALGESICS IN COMPARABLE DOSES GIVING THE SAME DEGREE OF ANALGESIA ON INTACT TISSUE. THE MODEL DESCRIBED SEEMS TO SHOW THE MAX. ACTIVITY OF THE NONNARCOTIC ANALGESICS AND PROVIDES A QUANT. COMPARATIVE METHOD FOR MEASURING PAIN ALLEVIATING ACTION.

FACILITY: MOSK. MED. STOMATOL. INST MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 621.3.049.75

TURUKIN, G. M., GRITSKOVA, V. V., SHUMILOV, A. S., OSTROZHINSKIY, A. V.,  
VESELOVSKAYA, V. A.

"A Method of Metallizing Multilayered Printed-Circuit Boards"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,  
No 5, Feb 71, Author's Certificate No 293311, Division H, filed 4 Aug 69,  
published 15 Jan 71, p 182

Translation: This Author's Certificate introduces a method of metallizing  
printed-circuit boards consisting of several layers. The procedure is based  
on sequential chemical and galvanic copper-coating of holes. As a distinguish-  
ing feature of the patent, reliable interlayer connections are provided by  
galvanic build-up of copper on the end faces of the contact platforms in  
the holes of the inner layers before electrochemical metallizing of the holes.  
Priority dates from 13 July 1967.

1/1

- 105 -

Acc. Nr.: AP0048495Ref. Code: UR 9037  
JPRS 58052Simplified Equation of State of Sea Water

(Abstract: "A Simplified Equation of State of Sea Water for the Range of Low Oceanic Temperatures," by O. I. Mamayev and A. V. Shumilov, Oceanology Department, Moscow State University; Moscow, Vestnik Moskovskogo Universiteta, Geografiya, No. 1, 1970, pp. 111-113)

It is important to obtain a simplified (in comparison with the generally used Knudsen-Ekman equation) equation of state of sea water. Such a simplified equation was derived by one of the authors (O. I. Mamayev, Izv. AN SSSR, Ser. Geofiz., No. 2, 1964). It had the form

$$\sigma_T = 28.152 - 0.0735T - 0.0469T^2 + (0.802 - 0.002T)(S - 35) \quad (1)$$

where T is temperature (°C), S is salinity (‰),  $\sigma_T = (\rho - 1) 10^3$  is nominal density,  $\rho$  is sea water density. Equation (1) has a good accuracy in comparison with other simplified equations. However, it appeared desirable to evaluate the error in equation (1) in greater detail because its error relative to the Knudsen-Ekman equation was quite small only in a certain range of oceanic temperatures and salinities. It was found that the accuracy of equation (1) decreases considerably at

Real/Frame

19800210

12

AP0048495.

low oceanic temperatures, particularly in the region of negative temperatures. This is understandable if it is taken into account that the dependence of sea water density on temperature and salinity deviates insignificantly from linear in the region of low temperatures. However, an increase in the accuracy of the simplified equation of state of sea water in the region of maximum nonlinearity, in the region of low (including negative) oceanic temperatures, is extremely desirable because it can be used for studying phase transitions and thermodynamic interaction between water and ice. An improved formula is derived for salinities  $0 \leq S \leq 40\text{‰}$  and for temperatures in the range  $-2^\circ$  and  $+2^\circ\text{C}$ .

$$\sigma_T = 28.126 - 0.0263 T - 0.0017 T^2 + (0.8072 - 0.0017T) (S - 35)$$

The error in computing  $\sigma_T$  with this new equation is only one-third as great as when the original equation is used for the particular temperature range.

19800211

di

USSR

UDC 669.715:539.26

KLESHCHEV, G. V., TOLDIN, V. A., SHEYNKMAN, A. I., RASPOPOV, Yu. G.,  
SHUMILOV, D. V., and TROFIMOV, V. G., Chelyabinsk Pedagogical Institute

"X-Ray and Electron-Microscopic Investigation of the Decay of Supersaturated  
Solid Solution in AlZn Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 4, Oct 70, pp  
762-767

Abstract: A study was made of the decay of the supersaturated solid solution in AlZn alloys with 40, 50, and 60 wt. % zinc using the X-ray and electron-microscopic methods. The process of decay at tempering temperatures above 200 (but below 275°) depends on the rate of quenching of the specimen from the homogenizing temperature to the tempering temperature. During slow quenching a metastable  $\alpha'$ -phase develops, while during fast quenching a stable  $\alpha$ -phase develops. The possible reasons for such a dependence are considered. The role of the effect of foil thickness is noted.

1/1

- 81 -

1/2 024  
UNCLASSIFIED  
TITLE--ZONES AND MODULATED STRUCTURE IN AGING AL, ZN ALLOYS -U-  
PROCESSING DATE--27NOV70  
AUTHOR--(05)-KLESHCHEV, G.V., TOLDIN, V.A., SHUMILOV, D.V., PANDOV, V.N.,  
RASPOPOV, YU.G.  
COUNTRY OF INFO--USSR  
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(4), 818-20  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--ALUMINUM ALLOY, ZINC ALLOY, SOLID SOLUTION, ELECTRON  
MICROSCOPE, METAL AGING, METAL MICROSTRUCTURE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3001/0555  
STEP NO--UR/0020/70/191/994/0818/0820  
CIRC ACCESSION NO--AT0126302  
UNCLASSIFIED



2/2 024

CIRC ACCESSION NO--AT0126302

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE FORMATION IN AL,ZN ALLOYS DURING THE DECOMP. OF THE SUPERSATD. SOLID SOLN., OF SPHEROIDAL ZONES ENRICHED WITH ZN WAS STUDIED TO DET. WHETHER THESE ZONES ARE THE RESULT OF SPINOAL DECOMP. TWO COMPETING PROCESSES WERE DETD. DURING THE DECOMP. OF THE SUPERSATD. SOLID SOLNS.: THE FORMATION OF ZONES AND THE FORMATION OF A MODULATED STRUCTURE. ZONE FORMATION PROCEEDED WITH THE ACTIVE PARTICIPATION OF VACANCIES, AND THEREFORE IT IS ASSUMED THAT DURING THE EARLY STAGE OF DECOMP. THE ZONE FORMATION CAN SUCCESSFULLY COMPETE WITH THE MODULATED STRUCTURE FORMATION. VACANCIES STIMULATED THE RAPID GROWTH OF ZONES AND SUBSEQUENT TRANSFORMATION OF THESE ZONES INTO CRYSTALLITES OF THE BETA PHASE. ZONE FORMATION CANNOT BE REGARDED AS THE REALIZATION OF SPINOAL DECOMP. THE STUDY WAS CARRIED OUT WITH AN ELECTRON MICROSCOPE OF AN AL,ZN 40 WT. PERCENT ALLOY, WHEREBY THE SPECIMENS WERE HEATED DIRECTLY IN THE ELECTRON MICROSCOPE AND THE DECOMP. WAS OBSD. AND STUDIED. FACILITY: CHELYABINSK. GOS. PEDAGOG. INST., CHELYABINSK, USSR.

UNCLASSIFIED

USSR

UDC: 538.56:535

SUKHORUKOV, A. P., FEL'D, S. Ya., KHACHATRYAN, A. M., SHUMILOV, E. N.

"Stationary Thermal Self-Focusing of Laser Beams"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 2(8), 1972, pp 53-61

Abstract: The paper deals with some problems in the theory of thermal self-focusing of continuous laser emission. A theoretical geometric optics equation is found for a nonlinear absorbing medium which can be used to plot the aberration pattern of thermal self-focusing. An analysis is also made of the structure of the focal region, and the behavior of the field at the focus is discussed for a wide range of variation in the absorption of the medium and in the input power. The stability of stationary thermal self-focusing is investigated, and it is shown that thermal self-focusing of actual high-power beams takes place without breakdown into separate filaments. Four illustrations, bibliography of nine titles.

1/1

USSR

UDC 621.375.82

SUKHORUKOV, A. P., FEL'D, S. Ya., KHACHATRYAN, A. M., SHUMILOV, E. N.,  
"Steady-State, Thermal Self-Focusing Laser Beam"

V sb. Kvant. elektronika (Quantum Electronics -- Collection of Works),  
No. 2, Moscow, "Sov. radio", 1972, pp 53-60 (from RZh-Fizika, No 10,  
Oct 72, Abstract No 10D877)

Translation: Certain problems in the theory of thermal self-focusing of continuous laser radiation are discussed. A ray equation of geometrical optics was obtained for a nonlinear absorption medium; the equation makes it possible to construct an aberration diagram of thermal self-focusing. The structure of the focal region is analyzed, and the behavior of the field at the focus is analyzed over a wide range of change in the absorption medium and the input power. The stability of steady-state, thermal self-focusing is investigated, and it is shown that thermal self-focusing of actual beams of high power occurs without their decay into separate rays. 9 ref. Authors abstract.

1/1

- 32 -

USSR

UDC 551.501.8(124):551.510.52

SHUMILOV, I. A., KOSTERIN, I. N., and SMIRNOV, V. B.

"Side Propagation for Radio Waves Over Subauroral Ranges from Data of Tilted Probing of the Ionosphere"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. I (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 1--collection of works) "Nauka," 1972 pp 456-460 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A345)

Translation: The basic characteristics of signal propagation characterized by the deviation of the direction of propagation from the great circle arc (side signals) observed in ionograms of tilted probing of the ionosphere in the Murmansk-Leningrad path, are described. Bibliography of four. A. L.

1/1

Transformation and Structure

USSR

UDC 669.27.017

VEDERNIKOVA, V. A., MIL'MAN, Yu. V., POSTNOV, L. M., POPOV, A. P., SLENZAK, G. YE., TREFTILOV, V. I., and SHUMILOV, I. M., Institute of Metal Physics, Academy of Sciences, Ukr SSR

"Structural Changes During Annealing of a Precipitation Hardened Tungsten Alloy"

Kiev, Metallofizika, No 40, 1972, pp 45-49

Abstract: Translucent electron microscopy, metallography, and diffraction line width measurements were used to study the structural changes resulting from the annealing of deformed tungsten in which 0.2% ZrC had been added during melting. At up to 1200°C a dispersed cellular structure is preserved in the alloy along with a structure stabilized by precipitations of a second phase. These were identified as ZrC in an x-ray investigation of the deposit obtained during electrochemical dissolving of the tungsten. In isolated sections of the alloy, with an increased density of second-phase particles, the cellular structure was preserved even after annealing at 2340°C. Increased recrystallization temperature is accompanied by increased heat resistance. 4 figures, 2 bibliographic references.

1/1

1/2 029 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--EFFECT OF HYDROGEN ON THE INTERNAL FRICTION OF ALPHA IRON AT ROOM  
TEMPERATURE -U-  
AUTHOR--(02)-SHUMILOV, M.A., VACHEV, Z.K.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. VYSSH. UCHEB. ZAVED., CHERN. MET. 1970, 13(1), 136-9  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--HYDROGEN, METAL INTERNAL FRICTION, IRON ALLOY, CRYSTAL  
DISLOCATION, PLASTIC DEFORMATION, GAS CONTAINING METAL, METAL CONTAINING  
GAS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1986/1009 STEP NO--UR/0148/70/013/001/0136/0139  
CIRC ACCESSION NO--AT0102943  
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AT0102943

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE EFFECT WAS DETD. OF H ON INTERNAL FRICTION IN ALPHA FE (C 0.07, S 0.022, P 0.01, SI 0.02, CR 0.04, NI 0.02, AND MN 0.37 WT. PERCENT) AS WELL AS THE INTERACTION OF H WITH DISLOCATIONS. THE FE WAS HYDROGENATED ELECTROLYTICALLY AT ROOM TEMP., THEN SUBJECTED TO VARIOUS HEAT TREATMENT OPERATIONS, AND INTERNAL FRICTION WAS DETD. BY TORSIONAL VIBRATIONS. SUBSEQUENTLY, A PURIFIED FE (BY LONG ANNEALING IN H AT 1100DEGREES WITH ANNEALING IN VACUO FOR 3 HR AT 650DEGREES TO REMOVE MOST OF THE H) WAS SIMILARLY TESTED. THE HYDROGENATION OF FE PROBABLY CHANGED THE CONC. AND COMP. OF COTTRELL CLOUDS. THIS IS CONFIRMED BY THE FACT THAT THE CRIT. RELATIVE DEFORMATION CHANGED AFTER THE HYDROGENATION. SEVERAL INDICATIONS LEAD TO THE CONCLUSION THAT H IN ALPHA FE IS FAIRLY STRONGLY BOUND TO DISLOCATIONS AND THEREBY HAS CONSIDERABLE EFFECT ON INTERNAL FRICTION. CONSEQUENTLY, THE DIFFUSIONAL MOBILITY OF H IN ALPHA FE SUBJECTED TO PLASTIC DEFORMATION SHOULD BE REDUCED.

UNCLASSIFIED

USSR

UDC: 681.2.037.92

ZAKHAROV, A. Z., SHUMILOV, N. A., Special Design Office of Industrial Automation Systems

"A Device for Limiting Direct Current"

USSR Author's Certificate No 256012, filed 10 Jun 68, published 2 Apr 70  
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 11,  
Nov 70, Abstract No 11A111 F)

Translation: This Author's Certificate introduces a device for limiting direct current which contains a reference diode connected to the output of a magnetic amplifier through a limiting diode. The device also contains two transistors and a stabilivolt which is connected in parallel with the load. To improve the statistical characteristics of the device, in series with the reference diode is a resistor which is connected to the auxiliary input winding of the magnetic amplifier. This winding is connected in opposition to the control winding. One illustration. V. M.

1/1



1/2 022  
TITLE--DYNAMICS OF THE ZONE OF CORPUSCULAR INJECTIONS -U-  
AUTHOR--(03)-ZAYTSEVA, S.A., PUDOVKIN, M.I., SHUMILOV, O.I.  
COUNTRY OF INFO--USSR  
SOURCE--RAZDEL IV, POLYARNYYE SIYANIYA, 1970, NR 19, PP 42-50  
DATE PUBLISHED-----70  
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, ASTRONOMY, ASTROPHYSICS,  
ATMOSPHERIC SCIENCES  
TOPIC TAGS--GEOMAGNETIC STORM, POLAR AREA, SOLAR CORPUSCULAR RADIATION,  
SOLAR WIND, MAGNETOSPHERE, AURORA  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FAME--1994/0118  
CIRC ACCESSION NO--AP0114514  
STEP NO--UP/3307/70/000/019/0042/0050  
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--02OCT70

2/2 022

CIRC ACCESSION NO--AP0114514

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER ANALYSES CERTAIN PHENOMENA OF THE POLAR MAGNETIC STORM AND DESCRIBES THE CHARACTERISTIC FEATURES OF ITS DEVELOPMENT. AT THE START OF THE DISTURBANCE THE ARCS ARE DISPLACED TO THE EQUATOR. FURTHER EXPANSION OF THE AURORA BELT IS ACCOMPANIED BY A CONSIDERABLE SHIFT OF THE SOUTHERN BOUNDARY OF THE BELT TO THE EQUATOR. THE LONGITUDINAL DRIFT TO THE REGION OF INJECTION OF CORPUSCULAR STREAMS IS STUDIED ON THE BASIS OF THE DATA ON BAY LIKE DISTURBANCES AND OF THE DATA ON AURORAE ABSORPTION. THE REGION OF INJECTION OF THE PROTONS DRIFTS FROM THE MIDNIGHT MERIDIAN TO THE WEST AND THE TOTAL REVOLUTION AROUND THE EARTH IS APPROXIMATELY ONE HOUR. THE INJECTION REGION OF THE ELECTRONS DRIFTS FROM THE WEST TO THE EAST. THE MEAN ENERGY OF ELECTRONS TAKING PART IN SUCH GRADIENT DRIFT IS ABOUT 100 KEV. THE PAPER STUDIES THE TIME CONNECTION BETWEEN THE BAYS IN THE AURORAE ZONE AND THE MAGNETIC POLE VARIATIONS ON THE EQUATOR. 1-2 HOURS BEFORE THE MAXIMUM OF THE BAY IN THE AURORAE ZONE A SLIGHT INCREASE OF THE H COMPONENT IS OBSERVED ON THE EQUATOR. THE OBTAINED DEPENDENCE IS INTERPRETED AS THE RESULT OF THE INCREASE OF SOLAR WIND PRESSURE ON THE MAGNETOSPHERE.

UNCLASSIFIED

1/2 016  
TITLE--MERIDIONAL MOTION OF AURORAL ABSORPTION BAYS -U-  
UNCLASSIFIED  
PROCESSING DATE--16OCT70  
AUTHOR--(02)--DRYATSKIY, V.N., SHUMILOV, O.I.  
COUNTRY OF INFO--USSR  
SOURCE--GEOMAGNETIZM I AERONOMIJA, VOL. 10, NO. 2, 1970, P. 305-311  
DATE PUBLISHED-----70  
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, ATMOSPHERIC SCIENCES  
TOPIC TAGS--AURORA, GEOMAGNETIC LATITUDE, RADIO NOISE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/0154  
STEP NO--UR/0203/70/010/002/0305/0311  
CIRC ACCESSION NO--AP0119150  
UNCLASSIFIED

2/2 016

CIRC ACCESSION NO--AP0119150

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. OBSERVATIONAL DEMONSTRATION OF A  
SYSTEMATIC LAG IN THE ONSET OF AURORAL ABSORPTION AT STATIONS LOCATED TO  
THE NORTH AND SOUTH OF A CERTAIN MEAN GEOMAGNETIC LATITUDE (65 TO 66  
DEG), USING GALACTIC RADIO NOISE RECORDINGS. THE SPEED OF MOTION TO THE  
NORTH DECREASED GRADUALLY WITH DISTANCE FROM THE INITIAL INTRUSION  
REGION.  
FACILITY: ARKTICHESKII I ANTARKTICHESKII NAUCHNO  
ISSLEDOVATEL'SKII INSTITUT, LENINGRAD, USSR.

UNCLASSIFIED